

ABSTRACT OF THE DISCLOSURE

A process for removing sulfur from a H_2S -containing gas stream is disclosed. A preferred embodiment of the process comprises incorporating a short contact time catalytic partial oxidation reactor, a cooling zone, and a condenser into a conventional refinery or gas plant process, such as a natural gas desulfurizer, a hydrotreater, coker or fluid catalytic cracker, in which sulfur removal is needed in order to produce a more desirable product. An H_2S -containing gas stream is fed into a short contact time reactor where the H_2S is partially oxidized over a suitable catalyst in the presence of O_2 to elemental sulfur and water.